Attorney Docket No.: 2001P05879US

REMARKS

Reconsideration of the claims is respectfully requested.

Claims 1-16 are pending in the application. Claims 5, 6, and 11-16 are allowed. Claims 1-3 and 7-9 are rejected. Claims 4 and 10 are objected to.

Claims 1-3 and 7-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,873,830 of Hossack et al. ("Hossack") in view of U.S. Patent No. 5,178,147 of Ophir et al. ("Ophir"). Claims 4 and 10 are objected to, but would be allowable if rewritten. Claims 5, 6, and 11-16 are allowed. Applicants respectfully request entry of the present Amendment and reconsideration of the claims.

Claims 1 and 7 have been amended.

Claims 1-3 and 7-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Hossack in view of Ophir. Hossack discloses an ultrasound imaging system and method for improving resolution and operation. Although Hossack discusses compression, all references to compression within Hossack are to data compression, either logarithmic compression of the image data to improve visual changes in the image, or MPEG compression, a standard of data compression for movies (clips of images over time). Claims of the present application relate to tissue compression for strain imaging, wherein compression is to be achieved by inducing a physical pressure on tissue. Applicants respectfully submit that the compression profiles of Hossack are not related to tissue compression as claimed in the present claims. On page 3 of the July 9, 2004 Office Action, the Examiner at section 5 stated that Hossack discloses "performing a motion analysis on at least two selected Regions of Interest (ROI) before and after ***tissue*** compression" (emphasis added). However, Applicants respectfully submit that Hossack does not disclose any tissue compression. Column 7, line 64 through column 8, line 10 describes logarithmic compression in order to compress the data into the limited dynamic range allowable by system 110. This is not tissue compression for strain computation. Column 22, lines 25-55 is a description of the use of a portion of an MPEG data compression standard be used for motion detection (column 21, lines 51-66). MPEG data compression uses local blocks within an image and motion vectors from image to image to improve data compression. These local motion vectors can be extracted and used to estimate local motion within the ultrasound clip. Finally column 22, lines 47-55 provides a means for logarithmic compression base 2 for data values 128-255, by subtracting 128 and then doubling

the outcome. Thus Applicants respectfully submit that Hossack does not teach or suggest the present claims.

Ophir describes a conventional strain measurement apparatus in which strain images are created by comparing echo data obtained before and after a slight compression of the tissue. Typically strain images are made from strain measure point by point, pixel by pixel, before and after compression. However, there are several problems with this type of method for quantifying the strain. First, there are artifacts that can be generated based on the probe usage over several points. Second the system is time-consuming and tedious. Thirdly, other areas can distort the measured strain due to shadows, cavities and other areas of anomalies within the area being imaged. The present independent claims provide a strain estimate for estimating each of the at least two regions of interest (ROIs) based upon the motion analysis and compares the strain estimates of each of the at least two ROIs to quantify the strain for the at least two ROIs. Thus Applicants respectfully submit that Ophir does not teach or suggest the present claims.

Even if Hossack and Ophir were combined, the combination of the motion techniques of Hossack and the displacement estimation techniques of Ophir do not yield a quantification technique wherein the quantification is derived from a comparison of the strain estimates over two ROIs. Applicants respectfully submit that that combination of Hossack and Ophir do not teach or suggest "performing a motion analysis for tissue strain quantification on at least two selected regions of interest (ROI) before and after tissue compression; providing a strain estimate for each of said at least two ROIs based upon said motion analysis; and comparing said strain estimates of each of said at least two ROIs to quantify strain for the at least two ROIs." Thus Applicants respectfully submit that the rejection under 35 U.S.C. §103(a) has been overcome and claims 1-16 are allowable.

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CONCLUSION

Applicants respectfully submit that all of the pending claims are in condition for allowance and seeks early allowance thereof. If for any reason, the Examiner is unable to allow the application but believes that an interview would be helpful to resolve any issues, he is respectfully requested to call the undersigned at (650) 943-7350.

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Respectfully submitted,

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